99. FOODS AND BEVERAGES

426/29

OHOL.
h ng-
Processes.

51 1883 ①

Mashing

Malt added in successive portions

RECORDED

~~193~~ 120 99 ~~964~~

A.D. 1883, *7th August.* N° 3831.

Manufacture of Beer, Distilled Liquors, Syrups, or Extracts.

LETTERS PATENT to William Clark of the firm of A M and W Clark, of 53 Chancery Lane in the County of Middlesex, Fellow of the Institute of Patent Agents for an Invention of IMPROVEMENTS IN THE MANUFACTURE OF BEER, DISTILLED LIQUORS, SYRUPS OR EXTRACTS communicated to him from abroad by Alfred Emanuel Feroe and William Edward Feroe, both of Tivoli, Dutchess County and John Sherman Bancroft, of New York City, both in the State of New York, United States of America

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PROVISIONAL SPECIFICATION left by the said William Clark at the Office of the Commissioners of Patents on the 7th August 1883.

WILLIAM CLARK of the firm of A. M. and W. Clark of 53 Chancery Lane in the County of Middlesex Fellow of the Institute of Patent Agents, "IMPROVEMENTS IN THE MANUFACTURE OF BEER DISTILLED LIQUORS, SYRUPS, OR EXTRACTS." [communicated to him from abroad by Alfred Emanuel Feroe and William Edward Feroe, both of Tivoli, Dutchess County and John Sherman Bancroft, of New York City, both in the State of New York, United States of America]

This Invention relates to the employment of corn-meal in the making of beer, syrups and distilled liquors, with the object of avoiding the difficulties that were heretofore experienced whenever corn-meal for such purpose was employed. These difficulties principally were a small yield, a strong, raw, and disagreeable flavor, and the refusal to drain freely from the mash. Moreover the oil or fatty acids usually remaining in the extract, imparted an unpalatable flavor to the beer acting also as a poison to the yeast causing the same to deteriorate so as to render a vigorous and healthy fermentation impossible. Other disadvantages connected with the former treatment of corn-meal may be mentioned, but it will suffice to state at this place that they were so numerous as to prevent the employment of corn-meal in the making of beer, syrup, and distilled liquors to any appreciable extent.

By the present process the difficulties are intended to be overcome with an effect of introducing into the useful arts a substance for the manufacture of beer and

[*Price 4d.*]

other liquors that is less expensive than the substances heretofore employed for the like purpose, and which when properly treated will yield as favorable results in every respect.

In carrying out the Invention I proceed as follows:—I first saturate the corn-meal by the addition of water producing a mixture that will be sufficiently thin to allow it to be stirred. This mixture is then heated to the boiling point and kept in substantially that condition for about half an hour, more or less, being constantly stirred meanwhile. In order to prevent the meal burning during the act of boiling, which would happen to part of it presumably if an ordinary and open fire were used, it is here preferred to boil it with the aid of live steam which is discharged directly into it, either by a perforated pipe leading into a closed vessel that contains the meal, or by other means.

The products of condensation of this steam may also be used as the saturating vehicle for the meal, and if they should not suffice water may be added to a sufficient extent to make the meal of a consistency of say 35 to 45° Baumé.

After the boiling process has been carried on the proper length of time, which of course may vary with the quantity of meal contained in the vessel, with its greater or lesser degree of coarseness and with its varying qualities, the mixture is allowed to cool to a proper converting temperature which may vary from 130° Fah. to 180° F, more or less.

In this condition a small quantity of malt flour is added to the mixture and stirred with it for a short time, say half an hour, more or less. By this time the starchy constituents of the meal, the soluble albumenoids, the dextrine and salts will be sufficiently liquefied so that they may be separated by draining from the solid part of the meal. This draining process may be carried on through a perforated screen vibrating or otherwise upon which the mixture is dropped and on which it may be more or less agitated if desired.

After draining to a reasonable extent the remainder is subjected to pressure so as to let the liquid portions be practically separated from the solid portions, the solid portions being principally cellulose, insoluble albumenoids, and fatty acids that were contained in the meal. The whole of this liquefied starch is now boiled for a short period, say half an hour, more or less, if desired, so that all the starch cells not yet burst by the first treatment may be burst and all the volatile oil contained in them driven off. The same is then to be cooled down to any suitable temperature for mashing according to the proportions of sugar and dextrine required. The malt is then added and thoroughly stirred and the whole allowed to stand until the conversion is complete, after which we proceed the same as with a mash made with malt alone.

When a very strong concentrated wort is required as for syrup, a small quantity of malt flour may be added to the meal when it is first mixed with the water. This will keep it thinned so that it will not be necessary to use so much water. The quantity of malt flour required to thin the starch of the meal will vary with the varying qualities of the malt it is made from ; usually from 1 to 3 per cent will be sufficient.

SPECIFICATION in pursuance of the conditions of the Letters Patent filed by the said William Clark in the Patent Office on the 7th February 1884.

William Clark, of the firm of A. M. and W. Clark of 53 Chancery Lane in the County of Middlesex, Fellow of the Institute of Patent Agents. "IMPROVEMENTS IN THE MANUFACTURE OF BEER, DISTILLED LIQUORS, SYRUPS, OR EXTRACTS" A communication to me from abroad by Alfred Emanuel Feroe and William Edward Feroe, both of Tivoli, Dutchess County, and John Sherman Bancroft of New York City, both in the State of New York, United States of America

This invention relates to the employment of corn-meal that is meal made from Indian corn or maize, in the making of beer, syrups and distilled liquours, with the object of avoiding the difficulties that were heretofore experienced whenever corn-meal for such purpose was employed. These difficulties principally were a small yield, a strong raw and disagreeable flavor, and the refusal to drain freely from the mash. Moreover, the oil or fatty acids usually remaining in the extract imparted an unpalatable flavor to the beer, acting also as a poison to the yeast, causing the same to deteriorate so as to render a vigorous and healthy fermentation impossible. Other disadvantages connected with the former treatment of cornmeal may be mentioned, but it will suffice to state at this place that they were so numerous as to prevent the employment of corn-meal in the making of beer, syrup and distilled liquors to any appreciable extent.

By the process of this Invention the difficulties are intended to be overcome with an effect of introducing into the useful arts a substance for the manufacture of beer and other liquors that is less expensive than the substances heretofore employed for the like purpose, and which, when properly treated will yield as favorable results in every respect.

In carrying out this invention I proceed as follows: I first saturate the corn-meal by the addition of water, producing a mixture that will be sufficiently thin to allow it to be stirred. This mixture is then heated to the boiling point and kept in substantially that condition for about half an hour, more or less, being constantly stirred meanwhile. In order to prevent the meal burning during the act of boiling, which would happen to part of it presumably if an ordinary and open fire were used, it is here preferred to boil it with the aid of live steam, which is discharged directly into it, either by a perforated pipe leading into a closed vessel that contains the meal, or by other means.

The products of condensation of this steam may also be used as the saturating vehicle for the meal, and if they should not suffice, water may be added to a sufficient extent to make the meal of a consistency of, say 35 to 45 degrees Baumé.

After the boiling process has been carried on the proper length of time, which of course may vary with the quantity of meal contained in the vessel, with its greater or lesser degree of coarseness and with its varying qualities, the mixture is allowed to cool to a proper converting temperature, which may vary from 130 degrees Fahrenheit to 180 degrees Fahrenheit, more or less.

In this condition a small quantity of malt flour is added to the mixture and stirred with it for a short time, say half an hour, more or less. By this time the starchy constituents of the meal, the soluble albumenoids, the dextrine and salts will be sufficiently liquefied so that they may be separated by draining from the solid part of the meal. This draining process may be carried on through a perforated screen, vibrating or otherwise, upon which the mixture is dropped, and on which it may be more or less agitated, if desired.

After draining to a reasonable extent, the remainder is subjected to pressure so as to let the liquid portions be practically separated from the solid portions, the solid portions being principally cellulose, insoluble albumenoids and fatty acids that were contained in the meal. The whole of this liquefied starch is now boiled for a short period, say half an hour, more or less, if desired, so that all the starch cells not yet burst by the first treatment may be burst, and all the volatile oil contained in them driven off. The same is then to be cooled down to any suitable temperature for mashing, according to the proportions of sugar and dextrine required. The malt is then added and thoroughly stirred, and the whole allowed to stand until the conversion is complete, after which we proceed the same as with a mash made with malt alone.

When a very strong, concentrated wort is required, as for syrup, a small quantity of malt flour may be added to the meal when it is first mixed with the water. This will keep it thinned so that it will not be necessary to use so much water. The quantity of malt flour required to thin the starch of the meal will vary with the varying qualities of the malt it is made from; usually from one to three per cent. will be sufficient

Having described the nature of the said Invention and the manner of performing the same I declare that what I claim as the Invention to be protected by the hereinbefore in part recited Letters Patent is:

1st The process of treating Indian corn-meal, which consists in first saturating it with water, next applying heat thereto, and in then liquefying it and separating the starch, the soluble albumenoids, dextrine and salts from the same, substantially as described.

2nd The process of treating Indian corn-meal, which consists in first boiling it in the presence of water, then straining it, then adding malt to it while the meal is at a converting temperature, substantially as described.

3rd In preparing Indian corn-meal for the mashing process, the straining and pressing the liquefied starch from Indian corn-meal which has been boiled and thinned by a small quantity of malt, the subsequent cooling of the starch, and the final mashing it with malt, as described.

4th The process consisting in first boiling Indian corn-meal and stirring it in the presence of water, adding a small quantity of malt, then separating the soluble from the insoluble portions of the meal, then boiling the liquefied starch until the volatile oil is driven off, then stirring into it when cooled an additional quantity of malt and letting it stand until the conversion has taken place, as described

5th As a new article of manufacture, the product resulting from the process hereinabove described, either as an extract or syrup.

6th Fermented liquor containing the product resulting from the mixture of Indian corn-meal and malt, as described.

7th Distilled liquor containing the product resulting from the mixture of Indian corn-meal and malt, substantially as described.

In witness whereof, I the said William Clark have hereunto set my hand and seal this Seventh day of February A.D. 1884.

W^M CLARK (L.S.)

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